

Amendments to the Specification

Please replace the Abstract paragraph on beginning on page 21, line 7 with the following amended paragraph:

~~An apparatus and method is disclosed for a variable bandwidth X-DSL modem. The A~~
~~modem implements~~ implementing ~~a discrete multi-tone (DMT) line code with varying~~
~~selectable tone spacing of a multi-tone communication channel~~ depending on the bandwidth
availability on selected a corresponding subscriber lines line . ~~For short subscriber loops that~~
~~qualify for high data rates the spacing between tones in a tone set is expanded to support the~~
~~higher data rates. A DFT/IDFT engine is implemented in the DSP with a DFT portion to~~
~~convert digitized tone sets on a receive path for each channel to digitized symbols and an~~
~~IDFT portion to convert the digitized symbols on the transmit path to digitized tone sets. The~~
~~DFT/IDFT~~ A Fourier transform engine in the modem provides variable selectable tone
spacing for the at least one each multi-tone communication channel. by selection of a
processing interval for each successive tone set of the multi-tone communication channel A
variable rate interpolator couples to the IDFT portion of the DFT/IDFT engine and sets the
sampling rate at the output of the IDFT to match the sampling rate of a digital input to the
digital-to-analog (DAC) portion of the analog front end (AFE). A variable rate decimator
provides corresponding capability on the receive path. A scheduler couples to the DFT/IDFT
engine for scheduling channels to be processed by the DFT/IDFT engine during each
processing interval. An initialization procedure is used to determine appropriate tone spacing
to be used for the channel based on the loop qualifications of the channel.